Borrowing, Avoidance, and the Development of the Zulu Click Inventory

Undergraduate Research Thesis

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Introduction

The Zulu language of eastern South Africa is remarkable both for being one of the few languages known to have incorporated lingual-ingressive "click" sounds into its phonology through language contact, and for the unusually thorough and comprehensive nature of this incorporation, which has been noted by scholars at least since the 19th century (Döhne 1857). To help explain this, Herbert (1990a) proposes that *isihlonipho,* a sociolinguistic avoidance custom which the Zulu people have in common with neighboring Bantu peoples, played a decisive role in the integration of clicks into these languages. To date, however, the question of the structure of the click inventories which this integration produced – that is, why Bantu "click languages" utilize certain clicks and not others – has not been addressed. This is particularly worthy of consideration in light of the fact that these Bantu click inventories do not resemble phonetically the click inventories of the southern African non-Bantu (SANB) languages from which they are supposed to have "borrowed" their clicks (Beach 1938:82-88).

This thesis takes up the question of the Zulu click inventory's structure through a consideration of the synchronic processes, *isihlonipho* and word borrowing, which are believed to have historically contributed to the integration of clicks into Zulu. In the first several sections, I provide necessary linguistic context for the discussion, and describe *isihlonipho*. Next, examples of *isihlonipho* and borrowing are collated and statistically analyzed in order to discern whether either one contributed disproportionately to some aspect of the contemporary Zulu click inventory. After a discussion of the patterns which arise from this analysis, I conclude that the Zulu click inventory should be seen as emergent within Zulu from the parallel operation of these processes, and not as "borrowed" as one unit from SANB languages. I also propose a new characterization of the *isihlonipho* process counter to its traditional analysis as "consonant

replacement," and discuss the implications of this study for the understanding of *isihlonipho* as a historical phenomenon.

Clicks and the Zulu Language

The Nature and Distribution of Click Sounds

"Click" is the commonly used term for what is more precisely referred to in the phonetic literature as a consonant with lingual ingressive articulation. A click is produced by trapping air between the tongue and the roof of the mouth, then retracting the tongue so as to rarefy the air and produce a "popping" or "sucking" noise, depending on the place of articulation. An extremely diverse array of clicks is possible, as a click at any given place of articulation may be combined with "accompaniments," simultaneous or near-simultaneous manipulations of the vocal apparatus, to produce phonemically distinct effects such as nasalization or affricated release. Traditional phonological accounts of "click languages" propose some of the largest phoneme inventories of any documented language (Bradfield 2014:5).

Although clicks as expressive sounds are found all over the world, and English-speakers in fact use both dental and lateral clicks (Faye 1925:781), their distribution as phonological components of words is restricted to a comparatively small area of southern Africa, with a few outliers in Kenya and Tanzania. This fact, along with the high salience of clicks to speakers of languages which do not incorporate them, has led to an enduring interest in clicks and "click languages" on the part of the scholarly community. Certain unfortunate myths arising out of earlier scholarship, such as the myth that clicks are particularly difficult to pronounce or the related myth that clicks represent the sounds of "original" or "primitive" human speech, have necessitated repeated debunking (e.g. Güldemann & Stoneking 2008). In fact, clicks are not quite this exciting; their concentration and prevalence in southern Africa is best seen not as a relic of

early human speech but as simple evidence of long-term language contact at the regional level, dating back to before the Bantu migrations (Güldemann 2008:96).

A particular set of "click languages," including Zulu, has attracted particular attention due to that fact that their shared proto-language, Proto-Bantu, has not been reconstructed to include clicks of any sort. This set includes close relatives of Zulu in eastern South Africa, Lesotho, and Swaziland, discussed in detail below, but also some languages of the Okavango River region in northern Namibia and Botswana. In all cases these languages are or have previously been in contact with non-Bantu "click languages," and they are thought to have borrowed and incorporated click sounds through such contact. The precise nature of this borrowing and incorporation in Zulu is the subject of this thesis.

The Click Inventory of Zulu

The Zulu language incorporates a total of fifteen clicks, with five click series distributed across three places of articulation. A click series is here any phonotactically allowable combination of click accompaniments. The plain Zulu clicks are dental, alveolar, and lateral, and to each of these may be applied accompaniments which produce nasalization, aspiration, or pitch depression (the "depressor accompaniment"). In keeping with the phonotactics of non-click Zulu consonants, aspiration cannot be combined with either nasalization or depressor accompaniment; however, the latter two can be combined.

The depressor accompaniment in Zulu is produced by a "*sui generis*" (Traill, Khumalo, & Fridjhon 1987:270) laryngeal articulation, which accompanies certain consonants, both click and non-click, and lowers the pitch of the following vowel through the introduction of a Low register (Downing 2009). As Zulu is a tonal language, this pitch-lowering effect results in a phonemic distinction; the Low register means that the effect is perceptible regardless of whether

the following vowel takes a Low or High tone.

	Dental	Lateral	Alveolar
Plain	c [ǀ]	x [ǁ]	q [ǃ]
Aspirated	ch [ǀʰ]	xh [ǁʰ]	qh [ǃʰ]
Depressor	gc [ɡǀʱ]	gx [ɡǁʱ]	gq [ɡǃʱ]
Nasal	nc [ŋǀ]	nx [ŋǁ]	nq [ŋǃ]
Nasal-depressor	ngc [ŋǀʱ]	ngx [ŋǁʱ]	ngq [ŋǃʱ]

Table 1. The Zulu click inventory. Zulu orthography for each click is accompanied by its IPA representation.

The Historical-Linguistic Context of Zulu

Zulu's Genetic Relatives

Zulu is a Bantu language designated S.42 in Guthrie's (1948) still widely referenced classification of the family. The 4 and S, respectively, mark Zulu as a member of the Nguni language family within Guthrie's Zone S, or "Southern Bantu." The Nguni family, which also includes Xhosa, Ndebele, and Swati, has features of a dialect continuum and is generally agreed to be a valid genetic grouping. Guthrie's "Southern Bantu," however, is spurious from the point of view of genetic relationships (Herbert & Bailey 2004:63); accordingly, it will be ignored for the purposes of this thesis. The other established genetic grouping within Zone S which is relevant to the following discussion is the Sotho-Tswana family, which includes, inter alia, Sotho (spoken in Lesotho, also known as "Southern Sotho" or "South Sotho") and Tswana.

Reference should be made here to the work of Herbert & Huffman (1993) and Huffman & Herbert (1994), whose research suggests that "Eastern Bantu," for which they adopt a stricter definition than others who use the term (Herbert & Huffman 1993:65ff.), may constitute a valid higher-level grouping subsuming both Nguni and Sotho-Tswana (though this analysis is based on cultural traits and not the comparative method). The work in this thesis, while not necessarily

dependent on their proposals, accepts that Proto-Nguni and Proto-Sotho-Tswana speakers migrated to southeast Africa "in two streams" (Herbert & Huffman 1993:69) from a position around the African Great Lakes. This is in contrast to the position taken by, e.g., Vossen (1997:359), which supposes a process of linguistic and cultural divergence beginning around these groups' contemporary location in southeastern Africa, and which thus assumes a relatively shorter and more recent period of independent development of the Nguni and Sotho-Tswana peoples. Herbert's and Huffman's analysis would suggest that, in fact, it is the period of contact between these groups which has been shorter and more recent. This is borne out by linguistic evidence, discussed below.

Non-Bantu Languages in Southern Africa

Prior to the colonization of southern Africa and the arrival of Indo-European and Dravidian languages, speakers of Nguni and Sotho-Tswana languages coexisted for many hundreds of years with speakers of various other languages which predated Bantu expansion into the region. Due to a perceptual similarity between these non-Bantu languages, particularly involving the prominence of click sounds within their phonologies, they were initially grouped by European scholars into a single family. "Khoisan" or "Khoi-San," the compound name most frequently applied to this proposed family, was intended to encompass the largest perceived ethnic categories, the mostly-pastoralist "Khoi" (also "Khoe," historically "Hottentot") and the mostly-forager "San" (alternatively "Bushman"). However, rigorous application of historical-linguistic techniques has failed to corroborate such a connection between the "Khoisan" languages. In a summary of prior research, Güldemann (2008) proposes a minimum of three top-level families (excluding the East African languages): Khoe-Kwadi, Ju-ǂHoan, and Tuu.

"Khoisan," although it still sees relatively frequent use by linguists (cf. Bradfield 2014:4-

5), continues to misleadingly suggest a set of genetic relationships which is now discredited. Because of this, because "San" refers to a cultural identity of relatively recent origin rather than to any valid language family, and because "click languages," the only frequently used terminological alternative to "Khoisan," is insufficiently descriptive and may lead to confusion with Bantu languages such as Zulu, when this thesis needs to refer to the whole set of indigenous non-Bantu languages of southern Africa it will do so using the term "southern African non-Bantu," abbreviated SANB.

The *Hlonipha* Language Area

The set of genetic relationships germane to the current discussion having been enumerated in the preceding two sections, there is one more, areal grouping which must be mentioned. This proposed language area (tentatively so, as more research is required to establish the nature and depth of the historical contact between these languages) encompasses all those groups whose speakers practice *hlonipha*. *Hlonipha* is a set of customs, described in some detail below, which characterize deferential relationships between persons and which are based on a theme of avoidance. As noted by Herbert (1990a:305), the distributions of *hlonipha* and fully integrated Bantu clicks are coterminous; furthermore, the "strength" of *hlonipha* correlates cross-linguistically with the prevalence of clicks.

Participants in the *hlonipha* language area include all the Nguni languages and Sotho, but not the relatives of Sotho in the Sotho-Tswana language family. Among the Nguni, the Ndebele have lost the clicks they once had (Herbert 1990a:310), and both *hlonipha* and clicks are relatively weak among the Swati (Herbert 1990a:305); nevertheless, no Nguni group is known not to have had both of these traits historically. This distribution, along with the attenuated form of *hlonipha* observed in Sotho culture (Kunene 1958), strongly suggests that *hlonipha* as a

cultural trait developed in Proto-Nguni and spread to the Sotho people through extended contact. This contact, which seems to have been between the Sotho and speakers of Zunda languages (the branch of Nguni which includes Zulu and Xhosa), is additionally evidenced by Bourquin (1951), who provides a partial list of word borrowings among these languages, and by Güldemann (1999:58), who notes that a particular nominal suffix, **-kadi*, has an enhanced productivity only in this area.

Hlonipha and *Isihlonipho*

A Preliminary Note on the Term *Isihlonipho*

What I call *isihlonipho* has been in previous literature referred to either as *hlonipha*, with the caveat that this is indeed insufficiently specific (Kunene 1958:159), or as *isihlonipho sabafazi*, "*hlonipha* language of wives" (Herbert 1990b, Finlayson 2004), for the reason that married women are its practitioners in the modern context. However, there is reason to exercise caution in assuming that this same restriction applied in the time period under discussion in this thesis. With this in mind, and in order to easily and clearly differentiate between *hlonipha* as a cultural practice and the particular linguistic component under consideration, the term *isihlonipho* will here be extended to cover the set of linguistic avoidance behaviors referred to by these other names in previous works.

The General Nature of *Hlonipha* Practices

Hlonipha, typically translated as "respect" (Kunene 1958:159) or "respect through avoidance" (Herbert 1990a:303) encompasses a relatively wide variety of phenomena beyond those typically denoted by the word in the linguistic literature. While *hlonipha* in the narrow sense refers to a linguistic taboo observed by married women, *hlonipha* in the broad sense includes linguistic taboos observed by other members of the family unit and by entire clans, in

addition to behavioral taboos. In all cases, the observation of a *hlonipha* taboo establishes deference in a relationship by means of an avoidance behavior.

An example of a non-linguistic manifestation of *hlonipha* would be a married woman's obligation to avoid the center of her affinal kraal, where the cattle of her husband's family are kept, as this is a locus of male power (Herbert 1990b:457). Linguistic manifestations of *hlonipha*, on the other hand, typically have to do with the avoidance of personal names (see Zungu 1997 for a variety of examples). The difference between linguistic *hlonipha* in general and the *isihlonipho* of married women comes in the more extreme restrictions and in the particular strategies used to avoid prohibited names.

A Descriptive Account of *Isihlonipho*

Isihlonipho, as used here, describes the linguistic component of *hlonipha* which applies specifically to married women. Upon getting married, a Zulu or Xhosa woman is expected to avoid speaking the names of her senior male affines (in-laws), a group which may stretch well back into the ancestry of her husband's family (Herbert 1990b:459). The peculiarity of *isihlonipho* arises due to the fact that traditional Zulu names are derived from existing morphological roots (typically noun stems), and thus sound similar to and are semantically associated with words which may be quite common. For instance:

(1)		Personal name	Noun	Translation
	(a)	Umanzi	*amanzi*	'water'
	(b)	Undlu	*indlu*	'house'

(Herbert 1990b:461)

The married woman (the "deferent" in the *isihlonipho* relationship) is prohibited not only from speaking the name of a senior male affine (a "deferee") aloud, but from speaking any word which contains the same stem as the name or even which contains one of the syllables from that

stem (Herbert 1990a:303; cf. Finlayson 1982:37-38). Each word prohibited in this way constitutes a "target word" for the operation of *isihlonipho*; the speaking of any target word is considered to have the same undesirable effect as speaking the deferee's name itself, i.e. to "call the attention of senior males and the ancestral shades" (Herbert 1990b:471). A variety of negative consequences are believed to result from breaking the *isihlonipho* taboo (Herbert 1990a:308).

Words like "water" and "house," of course, are integral to everyday conversation. Thus, the deferent in an *isihlonipho* relationship is obligated by necessity to find an alternative to speaking target words. There are a number of strategies by which this may be accomplished. The object of these strategies is, necessarily, to communicate semantic meaning to the listener while avoiding a degree of phonological similarity which would draw the attention of the deferee to the deferent.

The first, and perhaps most obvious, *isihlonipho* strategy is to use a synonym of the target word which does not include any prohibited syllable. Such a synonym may be as exact as possible, may use semantic devices such as metonymy, or may use terminology which is deliberately archaic and reserved for the purposes of marked speech. (2c), for example, replaces the everyday term for "cow," a form possibly but inconclusively derived from Proto-Khoekhoe **goma* (Güldemann 2008:107), with the reflex of Proto-Bantu **gombe*.

(2)

	Target word	*Isihlonipho* form	Translation
(a)	*kufa*	*kushona*	'to die'
(b)	*umgaceka*	*umusa*	'kindness'
(c)	*inkomo*	*inombe*	'cow'

(Herbert 1990b:460)

A second strategy is to deform the target word by deletion of a syllable onset, so as to

alter the string phonetically while preserving a degree of intelligibility. As historically documented, this strategy is confined to the Xhosa people, and is not found among other groups in the *hlonipha* language area (Herbert 1990b:460).

(3)	Target word	*Isihlonipho* form	Translation
(a)	*isitena*	*isiyena*	'brick'
(b)	*umfana*	*um'ana*	'young man'
(c)	*iswekile*	*i'ekile*	'sugar'

(Finlayson 1982:48-49)

The final strategy, and the one which is the focus of this thesis, is to deform the target word by replacement of one syllable onset in the stem with another syllable onset.

(4)	Target word	*Isihlonipho* form	Translation
(a)	*ulunya*	*ulucha*	'cruelty'
(b)	*qabuka*	*xabuka*	'wake up'
(c)	*umuhla*	*umugca*	'day'

(Herbert 1990:460)

Note that in (4) the onset in the target syllable is replaced by a click each time. This is not mandatory, and in fact Finlayson (1982:49) reports that the Xhosa avoid clicks in coining *isihlonipho* terms. Most of the segments which they do use, however, are also sounds believed to have been borrowed from SANB languages.

(5)	Target word	*Isihlonipho* form	Translation
(a)	*inqwelo*	*ishwelo*	'wagon'
(b)	*umzuzwana*	*umtyutywana*	'moment'
(c)	*umntwana*	*umndyana*	'child'

(Finlayson 1982:47-50)

Clicks as Material for *Isihlonipho*

Despite this tendency in Xhosa, clicks are a common choice for *isihlonipho* replacements

in Zulu (Faye 1925), and, as will be discussed later on, there is evidence that this was previously the case for Xhosa as well. Prior research has suggested reasons for speakers' use of clicks including their acoustically salient, markedly "foreign" sound (Herbert 1990a:305-306) and the easy accessibility of clicks to speakers who were in regular contact with speakers of SANB languages. Although Herbert (1990a:300) disputes the notion that bilingualism *per se* caused the incorporation of clicks into Zulu, extended periods of Bantu-SANB contact must be inferred based in particular on genetic evidence (viz. Herbert 1990a:302).

To the above motivations for the use of clicks in *isihlonipho* should be added two more. The first is the fact that click replacements are relatively unlikely to produce an already-existing morphological stem with different semantic meaning, while this is not at all true for replacement by a non-click consonant. In the course of searching for instances of lexicalized *isihlonipho* in the Zulu lexicon (a process further detailed below) I found several short strings, among them <_aka> and <_ala>, into which several dozen different onsets might be inserted, each one producing a stem with its own dictionary entry and definition. Click replacement could easily serve as a way to cope with such high neighborhood density, particularly at a stage of the language at which relatively few lexemes contained clicks (cf. Herbert 1990a:305-306).

The second additional motivating factor for click replacements is the fact that the phonology of Zulu clicks closely mirrors that of Zulu non-click consonants; i.e., the consonants which the clicks replace in *isihlonipho*. As alluded to in the earlier discussion of the Zulu click inventory, aspiration, nasalization, and depressor accompaniment can all be found on both click and non-click consonants in Zulu (nasalization on clicks being equivalent to prenasalization on non-clicks). It is possible that the application of one of these accompaniments to the post-replacement click could make the *isihlonipho* form more phonologically similar to the target

word, resulting in increased intelligibility by reducing the amount of guesswork on the part of the listener as to what the pre-replacement onset had been. This hypothesis will be revisited later.

Theories Regarding the Historical Source of Zulu Clicks

SANB Loanwords in Bantu Languages

Since European scholars first encountered Nguni languages, there has been speculation regarding how they came to incorporate clicks. An easy explanation, and one hinted at by even the earliest theories (however racist and linguistically naïve they otherwise were, viz. Herbert 1990a:296-299), is that clicks were acquired from SANB languages in the course of borrowing SANB words which had clicks in them. Indeed, Zulu clearly evidences such loanwords:

(6)

	Zulu	Khoekhoe	Translation
(a)	*i-qhubu*	*!hubu-b*	'swelling'
(b)	*qhwisha*	*ǂhuwi*	'kindle'
(c)	*i-ngcwaba*	*ǀhoba-b*	'grave'

(Bourquin 1951)

Firstly, it should be noted that these loanwords with clicks represent only part of the impact of SANB languages on Zulu. In fact, several "layers" of likely Bantu-SANB contact may be distinguished. The earliest is identified by Güldemann (1999) in the distribution of a number of nominal suffixes (typologically rare in Bantu); these distributions align with the boundaries of Eastern Bantu as proposed by Herbert and Huffman (1993). A second layer of contact produced what Herbert (1990a:301) refers to as an "articulatory mode" influenced by features of SANB phonology. This contact affected languages beyond Nguni and Sotho, the "articulatory mode" being evidenced throughout Guthrie's (1948) Zone S, Shona excluded. Furthermore, if Herbert (1990a:301) correctly identifies certain lexemes as borrowings from SANB languages (and cf. Güldemann 2008:109-110), then this language contact was indeed so sustained and intensive that

it resulted in the borrowing of core subsistence vocabulary. Yet, like the first layer of contact, it did not involve the incorporation of clicks into Bantu. In this light, it is fair to ask what distinguishes the third layer of language contact, which led finally to Nguni's and Sotho's incorporation of clicks, from those which preceded it.

Additionally, certain data present a major challenge to the hypothesis that borrowing is *per se* responsible for clicks in Bantu. The data in question are the click-word vocabularies of Xhosa, Zulu, and Sotho, between which there is almost inexplicably little overlap. Bourquin (1951:81), in an exhaustive dictionary-based comparison, finds that only 376 out of 2,395 Xhosa click words (roughly 16%) are also found in the other two languages, and supposes a similar proportion for Zulu. It is difficult or impossible to attribute this divergence to independent borrowing from SANB languages, as Xhosa is the only Bantu "click language" in the region to have continued interaction with SANB groups into the historical period (Harinck 1969; cf. Faye 1925:777). Zulu's click vocabulary is only slightly smaller than that of Xhosa, even though it has for centuries been encircled by other Bantu languages. Any account of clicks in Nguni and Sotho must be able to accommodate this apparent rapid and independent development of click vocabulary on the part of the individual languages.

The "Priming" Effect of *Isihlonipho*

In a landmark article, blending linguistic anthropology with historical phonology, Herbert (1990a) provides just such an account. Herbert richly elaborates a line of argument first proposed in an embryonic form by Werner (1905) and Faye (1925), in response to the observations of Bourquin (1951) described above and to Herbert's own observation (1990a:299-300) that little else from SANB, particularly in the realm of phonology and morphology, seems to have accompanied clicks into Bantu.

The thrust of Herbert's hypothesis is that the custom of *hlonipha*, and in particular the practice of *isihlonipho*, "'primed' [Bantu languages] to be receptive to click incorporation" (Herbert 1990a:308). As described earlier, *isihlonipho* frequently involves the grafting of clicks onto inherited Bantu stems; in theory, at least, this creates a situation in which speakers are using clicks in Bantu speech, free from the constraints of language attitudes toward SANB (whatever they may have been in the contact period) and from the phonological awkwardness of code switching. *Isihlonipho* can be seen as "bridging the gap" between the highly disparate SANB and Bantu phonologies, paving the way for clicks to be kept even in words borrowed directly from SANB languages (Herbert 1990a:308-309).

Morphological Doublets and Click Vocabulary

Support for Herbert's hypothesis comes from an abundance of lexemes in *hlonipha* languages which are self-evidently products of *isihlonipho* click replacement; they derive from inherited stems, but in each case some part thereof has been replaced with a click (Faye 1925:767, Herbert 1990a:304). Over time, these *isihlonipho* forms have lost their connotation of respect, and are indistinguishable in all but phonology from inherited Bantu lexemes. Furthermore, if the lexeme which an *isihlonipho* form was created to replace has remained in the lexicon, the two can coexist with similar or identical meanings as a "morphological doublet," in the sense of Kroch (1994). Presumably because *hlonipha* prohibitions general enough to result in the total eradication of a target word from a language are relatively rare (cf. Zungu 1997), many such doublets exist.

(7)		Zulu	Translation
	(a)	*-danasa*	'act without feeling of shame'
		-canasa	'swagger'
		-chanasa	'walk in an insolent manner, strut about'

(b)	*ubuhlakalala*	‘disorder, confusion, things thrown about the place’
	ubucakalala	‘scattered mass’
(c)	*-thabatheka*	‘be carried away by emotion’
	-qabatheka	‘run, wander up and down, yearn for’

These “lexicalized” *isihlonipho* forms, including doublets, do not represent the majority of Bantu click words. However, they are not difficult to find, and scholars have consistently remarked on their relative abundance (e.g. Faye 1925:767). These doublets will be further investigated below.

Motivation and Scope of the Present Study

While it elegantly solves a number of the problems posed by Nguni and Sotho clicks, Herbert’s (1990a) analysis is not the end of the story. In particular, although it provides a convincing explanation for how and why the *hlonipha* languages incorporate clicks, it cannot *per se* explain the acoustic and phonological properties of the clicks resulting from this incorporation. These properties encompass click place of articulation and click accompaniment; taken together, these constitute what I will refer to as the “structure” of the click inventory. The term is used loosely, as phoneme inventories are not necessarily “structured” in a linguistically meaningful sense – however, cf. Bradfield’s (2014:20ff.) “concurrent phoneme” analysis of the !Xóõ inventory.

The structure of the Zulu click inventory has already been discussed, and can be observed in Table 1. The click inventory has two dimensions: series (or accompaniment) and place of articulation. Each of these dimensions must be accounted for adequately and independently if the development of the click inventory is to be fully understood.

The present research is largely unconcerned with place of articulation, for the reason that each of the Zulu plain clicks is already amply motivated. The only difference between the Zulu and Xhosa click inventories and the click inventories of SANB languages of the Khoekhoe

family is the addition in Khoekhoe of a palatal click [ǂ], which is typically pronounced by less experienced speakers as the similar-sounding alveolar [!] (Bourquin 1951:61, Beach 1938:77-78).

Additionally, Herbert's (1990c) investigation into the hierarchy of click markedness provides an explanation for variation in the number of click places of articulation among the *hlonipha* languages. While Herbert (1990c:131) expresses confusion at the fact that the hierarchy of markedness in the Bantu languages is the reverse of that in Khoe, with the "palatal" [!] respectively the least and most marked click in each language family, this makes sense considering Herbert's own (1990a) theory of the *isihlonipho* origin of clicks. The markedness of Bantu clicks reflects their current distribution within the Bantu languages; the least common place of articulation is the most marked, and vice versa. However, if it is true that Bantu speakers acquired clicks by using them in *isihlonipho* due precisely to their markedness, then we would expect that click which is most marked in SANB to be the first one acquired by Bantu speakers. This is precisely the pattern we observe.

The click accompaniments found in Zulu pose a more intriguing puzzle. As Beach (1938:82-88) discovers after a phonetic analysis of Khoekhoe clicks, the only click series which Bantu and SANB languages have in common is the nasal. The phonetics, then, of Zulu clicks are unexpectedly different from those in SANB, particularly if we imagine that the Bantu clicks were directly borrowed from SANB languages (whether in loanwords or otherwise). Herbert's (1990a) discussion of *isihlonipho* does not weigh in on this question. The object of the research described below is, following Herbert's analysis regarding the connection between *hlonipha* and Bantu clicks, to determine whether and how the processes of word borrowing and *isihlonipho* played a role in the development of the five Zulu click series.

Methodology

Isihlonipho Click Replacement

The process of *isihlonipho* click replacement will be investigated before that of borrowing as, for reasons already stated, it would appear to be the more promising of the two in terms of potential explanatory power. First, Zulu cannot have directly borrowed click accompaniments if such accompaniments do not exist in the donor language; second, the creator of an *isihlonipho* form has an incentive to make its relationship to the target word transparent, and in doing so may phonetically manipulate the click in order to make it more similar to the onset which it replaces. This may be thought of as "conserving" an accompaniment during the *isihlonipho* transformation. In my analysis of *isihlonipho,* I expect to find evidence of such conservation. Evidence would consist of a significant correlation between the presence of a particular accompaniment on onsets which undergo click replacement (the "target onsets"), and the presence of that accompaniment on the clicks which replace them (the "replacement onsets").

A sample of early *isihlonipho.* It is, of course, impossible to undertake any sort of statistical analysis without first procuring data. At the commencement of this research, the only available lists of *isihlonipho* click replacements were sporadic examples in articles describing *isihlonipho,* provided in order to illustrate the process (e.g. Herbert 1990a; Faye 1925 is a partial exception). While useful for this purpose, these data bear lesser relevance to a study of *isihlonipho* in its earlier, pre-historic form. This is in part because, as a matter of principle, conclusions about early *hlonipha* practices cannot be drawn based on observations of *hlonipha* practices today, but also because modern *isihlonipho* is necessarily performed using the modern Zulu click inventory. Examples taken from even the earliest attestations of *isihlonipho* cannot reflect a stage of the language at which clicks were in a sense *ad hoc,* and may have been more

phonetically "flexible" than they appear today.

Fortunately, there in fact exists a sizable dataset on early *isihlonipho,* accessible at least in theory to anyone with a Zulu dictionary. As already described, morphological doublets consisting of a lexicalized *isihlonipho* form paired with an inherited Bantu form have preserved evidence of early *isihlonipho,* in a manner that allows for easy and direct comparison of target and replacement onsets. However, no extensive list of these doublets has been previously compiled. In order to obtain a representative sample, I consulted the *Scholar's Zulu Dictionary* of Dent & Nyembezi (1995) and identified as many doublets as possible in the set of words with /Ca/-initial stems. This process was accelerated by transcribing the words into a computer text file using a phonemic orthography of my own devising (in order to eliminate Zulu di- and trigraphs) and performing an automated search for possible target word-replacement word correspondences using wildcard characters. Subsequently, the definition given for each stem in each pair found was hand-checked to verify whether the stems were sufficiently similar to justify doublet status. The search ultimately resulted in a list of 93 doublets, of which a few examples are given in (7) above; the full list can be found in the Appendix.

The primary weakness of this dataset is the lack of independent corroboration of my judgments on the similarity of the dictionary definitions. In order to avoid erroneous judgments in "borderline" cases, I made deliberately negative judgments in potential cases of semantic drift, even though a gradual differentiation in meaning is to be expected of morphological doublets (Kroch 1994). Other sources of error have not been identified, other than unpredictable sample bias. Using the set of /Ca/-initial stems, in addition to saving time, ensures that the distribution of onsets within the set reflects their distribution across the language, and precludes any effect of the vowel in the target syllable on the choice of click replacement.

Comparing target and replacement onsets in early *isihlonipho*. Each target onset and each replacement onset from the list of 93 *isihlonipho* doublets was coded positive or negative for each of the three accompaniments under consideration (nasalization, aspiration, and depressor).

The analysis of these data regards the probability of an *isihlonipho* speaker producing a replacement onset with the same accompaniment or accompaniments as the target onset. Independently for each accompaniment, the set of doublets for which the target onset was positive was isolated, and the proportion of positive replacement onsets within that set was obtained. These proportions were checked for statistical significance, using a two-tailed binomial test, against a chance value determined by the proportion of positive replacement onsets across all 93 doublets. The proportions are presented in Figure 1, alongside the calculated chance values for the purposes of visual comparison.

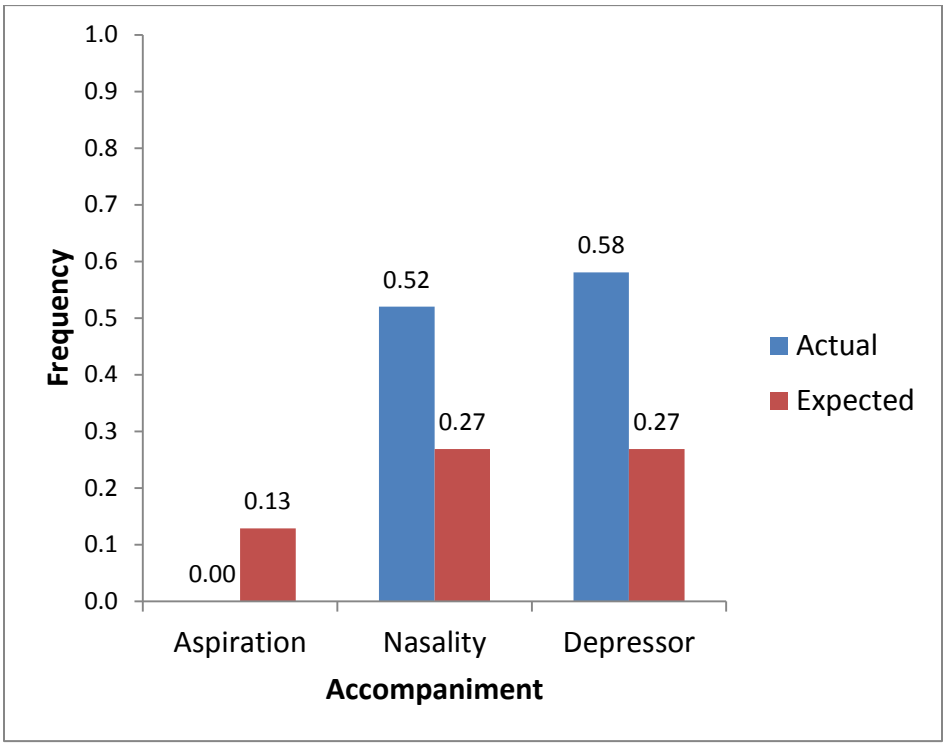

Figure 1. Probability of an early *isihlonipho* speaker conserving each of three possible accompaniments when replacing a syllable onset with a click.

Results indicate that nasalization ($p = 0.01$) and depressor accompaniment ($p < 0.01$) are present on replacement onsets significantly more often when they are also present on the target onset, suggesting that speakers did in fact deliberately conserve those accompaniments during *isihlonipho*. No statistically significant result is seen for aspiration ($p = 0.61$); more importantly, however, there are zero observed instances of aspiration on a click corresponding to aspiration on the target onset. The *isihlonipho* process appears to lack any explanatory power regarding the series of aspirated clicks in Zulu.

Proposed SANB Loanwords in Zulu

Having demonstrated that *isihlonipho* fails to account for aspiration, I next conduct a similar test using a list of loanwords from SANB languages. The purpose of this test is to determine whether loanwords may be responsible for introducing aspirated clicks into Zulu.

Data for this analysis is primarily drawn from Bourquin (1951), who in the course of comparing the Zulu, Xhosa, and Sotho click vocabularies also occasionally provides Korana or Nama words (Korana and Nama are the southern and northern branches, respectively, of the Khoekhoe family; cf. Güldemann 2008:98) from which he thinks a given Bantu word may be derived. For the sake of completeness, I add all of those additional loanwords suggested by Raper (2012:171-178) in his investigation of the SANB origins of Zulu toponyms, excluding the ones in which no click has been conserved. Although this final list of click loanwords amounts to just 41 entries, it is the most comprehensive which I was able to compile, and is satisfactory for at least a preliminary analysis. A few examples from Raper (2012) are given in (8); see also (6) above.

(8)

	Zulu toponym	SANB origin	Translation
(a)	*Cunjane*	ǀ*kanja* (Masarwa)	‘red’
(b)	*eMnqumeni*	ǂ*kau* (Hie)	‘olive tree’

(c) *Sixwembe* *si-*ǀ*gam*(Sesarwa) ‘spoon’

(Raper 2012:171-178)

The decision to analyze only aspiration, rather than depressor accompaniment and nasalization, is motivated by the extreme difficulty in reconciling SANB and Zulu orthography and phonology. Although SANB languages of all families are tonal (Miller-Ockhuizen 1998:217) and it is certainly conceivable that tones could have helped motivate the depressor accompaniment in Nguni, SANB tones are neither inherent nor represented orthographically, and thus there is no way to code for tone. As regards nasalization, the adaptation of SANB words into the comparatively restrictive Bantu phonological system results in a wide variety of sometimes-unpredictable phenomena. Within the dataset, there is evidence of non-adjacent nasalized vowels and even – possibly – nasal consonants being transformed into nasalization on the click; however, none of these demonstrate a clear pattern. In the end, I was unable to find any method of coding for nasalization which I felt was both well-motivated and internally consistent; however, I have provided a discussion below.

Attempts at statistical analysis. The adaptation of SANB words into Zulu presents one final problem. As stated above the only click series which Khoekhoe and Zulu truly have in common is the nasal series (Beach 1938:82-88). Thus, it is at least in principle an open question as to which Khoekhoe accompaniment might produce aspiration in Zulu. Although Beach (1938:83-84) asserts that the “strong unvoiced velar affricate” <_k> does in fact have a fricative component to its release, and even suggests orthographically representing it as <_x>, I ultimately chose to code only the “glottal unvoiced fricative” <_h> positive for aspiration. It is the only accompaniment with a purely fricative release, and Beach (1938:86), while maintaining that the aspirated Zulu clicks are dissimilar, gives no better suggestion. Using this data, an analysis using

the same method as above produced the following results:

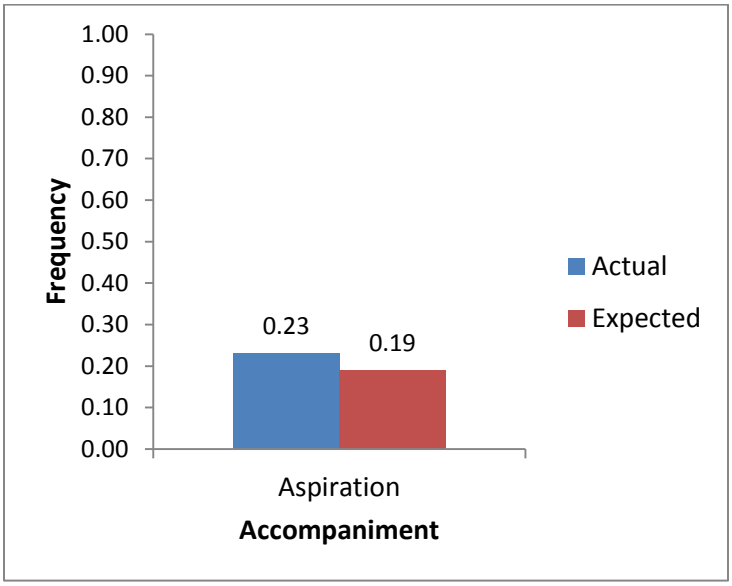

Figure 2. Probability of an early Zulu speaker conserving aspiration when borrowing an SANB word with a click <_h>.

Not only are these results far from statistically significant ($p = 0.73$), they are extremely unimpressive, with aspiration conserved at almost exactly chance value.

However, there is one consideration which was not made before this first test. Recall from the earlier explanation of the Zulu phoneme inventory that aspiration and nasalization are phonotactically incompatible. This is true for both non-click and click consonants. On occasion, a click or other consonant may become "de-aspirated," due to the output of a phonological rule in Zulu which causes nasals in clusters of the form /NC/ to become either prenasalization (on non-clicks) or a nasal accompaniment (on clicks) on the consonant which they precede; this nasalization then "overrides" any aspiration on that consonant. This rule operates to preserve the canonical open syllable structure of Zulu, and is somewhat analogous to a language-internal version of the nasal "unpacking" described by Paradis & Prunet (2000).

This phonological rule becomes relevant to the present analysis because one of the Zulu noun class prefixes, *in-/izin-* (Bantu noun classes 9 and 10, respectively) ends in a nasal, meaning

that the phonological rule will always be applied to a consonant-initial stem belonging to that noun class. While today loanwords in Zulu are uniformly given the "default" *i-/ama-* noun class, Bourquin's (1951) list suggests that this was not the case in the past. Khoekhoe-derived loanwords including |*hoab* 'cat' > *incwabi* and |*hu-khã-b* 'hyena' > *incuke* were given noun class prefixes based on their semantic content rather than phonology or grammatical convenience. The *in-/izin-* class is in fact dedicated primary to animals; cf. *ingonyama* 'lion,' *indlulamithi* 'giraffe,' and *inja* 'dog.'

Click-initial SANB loanwords which are given the *in-/izin-* class necessarily cannot have aspiration on the click; accordingly, they are deleted from the dataset. The same analysis now produces the following:

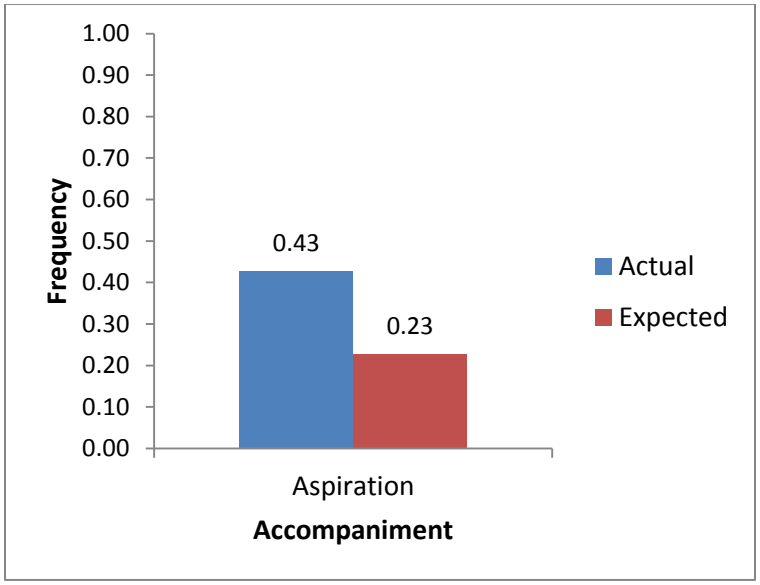

Figure 3. Probability of an early Zulu speaker conserving aspiration when borrowing an SANB word with a click <_h>, not in the *in-/izin-* noun class.

The results are still not statistically significant ($p = 0.20$). However, the sample size is now so small that statistical significance would be highly questionable in the first place; the total number of aspirated source clicks in this second analysis is only 7.

Discussion

Summary of Results

Historical evidence of both *isihlonipho* and word borrowing was analyzed to determine the impact of each on the modern Zulu click inventory. Data for *isihlonipho* showed correlations between target onsets and replacement (click) onsets regarding the presence of two click accompaniments, nasalization and depressor accompaniment, but failed to find any such correlation for aspiration. This suggested that another explanation needed to be found for the presence of aspirated clicks in the modern Zulu click inventory. Although analysis of word borrowing was limited only to aspiration and was inconclusive due to the small size of the sample, taken together, the results suggest that word borrowing, rather than *isihlonipho,* is responsible for the introduction of the aspirated click series into Zulu. More concrete conclusions, however, will need to wait until the SANB loanword strata in Zulu can be more thoroughly analyzed.

***Isihlonipho* as Segmental Analysis**

The results for *isihlonipho,* while they may seem surprising or arbitrary in the particular exclusion of aspiration, in fact raise fundamental questions regarding the nature of the *isihlonipho* process. Previous authors have uniformly analyzed *isihlonipho* as a process of replacing consonants (Finlayson 1982:43, Herbert 1990c:128). While this perspective is natural for any linguist accustomed to representing speech sounds in the International Phonetic Alphabet and the Latin alphabet – that is, to representing "consonants" and "vowels" separately and equally, as is the defining characteristic of alphabetic orthographies – it overlooks the fact that illiterate and pre-literate peoples do not necessarily have these same "alphabetic-segmental" notions regarding the speech signal. Indeed, in consideration of the account given by Faber (1992) of the development of the Greek alphabet from Phoenician, it is conceivable that no

human in history has ever independently devised the idea of alphabetic segmentation. Given that *isihlonipho* developed in a pre-literate environment and early speakers cannot have had access to "linguistically informed" judgments as such, the question of whether *isihlonipho* deformation strategies are formulated on an alphabetic-segmental basis demands further investigation.

In contrast to linguists' inherited notions regarding segmentation of the speech signal, which favor alphabetic-segmental strategies, the notions of illiterate and pre-literate people tend toward the syllable as the basic segmental unit (Aronoff 1992). Zulu, with its canonical open syllable structure and lack of complex consonant and vowel clusters, would seem particularly amenable to this pattern of segmentation. Assuming that word play such as *isihlonipho* does not implicate fundamentally different segmentation strategies from those involved in the creation of a naïve orthography, it seems vanishingly unlikely that the earliest speakers of *isihlonipho* would have undertaken to replace individual consonants as such.

Why, then, does *isihlonipho* appear so self-evidently to linguists as a process of consonant replacement? I propose a twofold explanation. First, as Zulu has only five vowels, vowels carry a high functional load in the language. They are, in a manner of speaking, the most important part of the Zulu syllable, and certainly the most likely to produce another meaningful lexeme if altered. Second, the syllable nucleus is by definition the most acoustically prominent part of the speech signal. If the goal of the *isihlonipho* speaker is, as I have suggested, to balance taboo observance with communicative capacity by deforming the target word to the smallest allowable degree, then observed examples of *isihlonipho* may be expected to exhibit a preference for conservation of the syllable nucleus over other components of the target syllable. Both of these considerations mean that the vowel is likely to stay the same, which, given the canonical syllable structure of Zulu, should appear to anyone analyzing the speech signal alphabetic-

segmentally as a change only in the preceding consonant.

The syllabic origins of *isihlonipho*. Following this line of thinking, an account of early *isihlonipho* might be proposed as follows: rather than identify and replace a consonantal segment within a target syllable, an *isihlonipho* speaker would analyze the syllable in its entirety as the segment and replace it with another syllable which had the same nucleus – i.e., given the open structure of the canonical Zulu syllable, which rhymed. Indeed, this accords with an intuitive understanding of speakers' naïve linguistic judgments; rhyming syllables are easy to produce, and are frequently implicated in word play. Incentive for *isihlonipho* speakers to produce syllables using sounds from outside the inherited proto-Nguni inventory may have been provided by the fact that the size of this inventory was relatively small prior to contact with SANB languages (Downing 2009:192), resulting in a neighborhood density effect similar to that described above regarding Zulu vowels.

However, the data call into question whether this can have been the form taken by *isihlonipho* for most of the pre-historic period. There is nothing self-evident about such a process which would motivate speakers to make considerations for similarity between the target and replacement syllables, the shared rhyme excepted. Additionally, it is some distance from segmental subdivision of syllables to recognition of phonemically distinguishing features on individual alphabetic-segmental units, yet it is exactly this ability which must be posited for early *isihlonipho* speakers if we are to suggest that they consistently picked depressor and nasal clicks to replace depressor and nasal target onsets – assuming that depressor effect and nasalization are analyzed as features on independent segments.

Segmental and suprasegmental features. Luckily, it is not necessary to analyze these qualities in this manner. In fact, the suprasegmental nature of depressor and nasal articulations is

part of what distinguishes them from aspiration (which as an element of the "linear" speech signal is a purely segmental phenomenon). As stated above, the depressor effect is articulated separately from the rest of the segment of which it is nominally a feature (Traill, Khumalo, & Fridjhon 1987:270), and in point of fact it is necessarily suprasegmental, as depressor articulation extends to the following vowel and affects the prosody of the syllable. Nasal articulations, too, exhibit under particular circumstances an ability to "float" above the segmental level before they are "tied down" by phonotactic constraints; Paradis & Prunet (2000) examine this phenomenon in the context of word borrowings, which bear some resemblance to *isihlonipho* word play. As a similar effect can already be observed in Zulu in the case of the *in-/izin-* noun class, it is not surprising that nasal articulations should exhibit some suprasegmental characteristics in *isihlonipho* transformations.

Non-alphabetic segmentation of Zulu. The difference between depressor effect and nasalization on one hand and aspiration on the other helps explain why we do observe a discrepancy in the conservation of these qualities during *isihlonipho* replacement. If *isihlonipho* acted only on syllables, there would be no reason to expect conservation of any of the three qualities, suprasegmental or otherwise. However, it is possible that the initial practice of *isihlonipho* replacement by rhyming syllables suggested to *isihlonipho* listeners a new possibility for segmental analysis – one which separated syllable onsets and nuclei, and which was thus closer to the alphabetic-segmental analysis of most contemporary linguists. The process at work would be a simple realignment of the grammar comparable to that involved in more common forms of language change. Once such a generation of *isihlonipho* listeners aged into *isihlonipho* speakers, equipped with a more fine-grained segmentation ability, these speakers would then have had the freedom to replace syllable onsets in more or less the way that has been suggested

by contemporary linguistic analyses of *isihlonipho.*

These analyses remain partially deficient, however, as long as they insist on a fully alphabetic-segmental analysis and subscribe to a view of the Zulu phoneme inventory under which depressor effect and nasalization are features and not phonemic quasi-"segments" in their own right (for the commonly accepted inventory, see Downing 2009:192). Throughout this thesis, I have used the word "onset" rather than "consonant" to emphasize that *isihlonipho* replacement takes place not on an alphabetic-segmental level incorporating nasalization and depressor effect, as previously assumed, but rather on a purely segmental level "underneath" the suprasegmental level to which these qualities are phonologically abstracted. Replacement on this segmental level would cause nasalization and depressor effect to be conserved in the *isihlonipho* form (as observed in the data) naturally and with no added effort on the part of the speaker.

The intuitions of pre-literate Zulu speakers regarding segmentation of the speech signal – intuitions which I propose developed specifically under the influence of early *isihlonipho* – appear to have been characterized by a distinction between the syllable onset and nucleus and by a separation of nasal and depressor qualities from the segmental layer. At least in this latter respect, they differ from the analysis of contemporary linguists studying the Zulu language. Although this is only a tentative suggestion and further research is required, it may be worth examining whether an analysis closer to that of early *isihlonipho* speakers might assist in devising an optimal account of Zulu phonology.

Contemporary Observations Not Reflective of Early *Hlonipha*

One of the key underlying arguments of this thesis has been that we cannot base our understanding of early *hlonipha,* which so thoroughly impacted the Nguni languages, on observations of the custom today. The list of *isihlonipho* doublets compiled for this study is

proof enough of this, as all explanations for the existence of such doublets besides *isihlonipho* are unsatisfactory, yet the modern *isihlonipho* custom could not produce such doublets in the lexicon. It is rare enough for a *hlonipha* form to achieve general use (Zungu 1997), much less one of the syllable-replacement *isihlonipho* forms which are now avoided by men.

It should be noted that any characterization of *hlonipha* must be made with the understanding that it is poorly documented – if at all – in the period preceding the colonization of southern Africa, and *hlonipha* as it is currently understood has necessarily been affected by the extraordinary social change this colonization produced. *Hlonipha* today, particularly *isihlonipho*, tends to be aligned with intense and even violent manifestations of patriarchy (Wood, Lambert, & Jewkes 2008:60; Rudwick & Shange 2009). Certainly the patriarchal character of Zulu society can be traced well past the beginning of the colonial period (Hammond-Tooke 1998:13), but the Zulu patriarchy, like the rest of Zulu society, has undergone significant and perhaps underappreciated changes in the colonial and modern periods, in the course of its interaction with imported European patriarchy (Guy 1990). Phenomena such as the restriction of *isihlonipho* exclusively to married women, or the abrupt cessation of *isihlonipho* with the beginning of male socialization (Zungu 1997:180), cannot be presumed for the pre-historic time period during which the Zulu language developed into its present form. This consideration may provide some insight into how *isihlonipho* was able to affect the Nguni and Sotho languages so thoroughly, when today it is a marker of social and political marginalization.

Conclusion

Taking as a starting point Herbert's (1990a) theory that *isihlonipho* contributed definitively to the incorporation of clicks into the Nguni and Sotho languages, we collected data on both *isihlonipho* and word borrowing in an attempt to quantify the effect each may have had

on the modern Zulu click inventory, and to determine whether the Zulu clicks were borrowed *en masse* from SANB or if native Zulu phonological processes may in fact have helped to create "new" clicks from within the language itself. Our results, although they are somewhat qualified by a lack of data, suggest that the processes of *isihlonipho* and word borrowing did in fact impact the Zulu click inventory in different, and possibly complementary, ways.

The results further led us to a reconceptualization of the *isihlonipho* process away from "consonant replacement," with fresh emphasis on the difference between segmental and suprasegmental phenomena and on the intuitions of pre-literate speakers regarding segmentation of the speech signal. After this discussion, we reflected also on the misalignment between current-day observations of *isihlonipho* (and by extension *hlonipha* more broadly), and the form which the data suggest these customs took in the pre-historic period, during which they played a decisive role in the production not only of the Zulu language, but also of the distinct culture and identity of the Nguni and Sotho peoples.

This thesis is presented in the hopes that it might contribute to the further understanding of the *hlonipha* custom and of the deep effect which that custom has had on the languages of the Nguni and Sotho peoples, and that it might shine some small amount of light on the still-poorly understood population history of southeast Africa. However, the data and the reflections presented herein should also bear some relevance for those interested in the phonology of clicks, in segmentation, and in word avoidance taboos cross-culturally.

Appropriate directions for further research relevant to this thesis would include a continued systematic analysis of SANB contact strata as they appear in Zulu, and anthropological investigation into the historical Bantu-SANB cultural interaction which resulted not only in the genesis of *hlonipha* but in that of the entire Nguni people.

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Appendix

Isihlonipho correspondences used for analysis

Target root	***Isihlonipho* form**
c	
bha**d**eka	bha**c**eka
danasa	**c**anasa
daphuna	**c**aphuna
fa**hl**aka	fa**c**aka
hlakalala	**c**akalala
hlazulula	**c**azulula
jambalala	**c**ambalala
phakulula	**c**akula
sakalala	**c**akalala
tanasa	**c**anasa
ch	
danasa	**ch**anasa
naphaza	**ch**aphaza
saphaza	**ch**apaza
tanasa	**ch**anasa
nc	
mpamuza	**nc**amuza
namuza	**nc**amuza

Target root	***Isihlonipho* form**
gc	
danasa	**gc**anasa
shaluza	**gc**aluza
yaluza	**gc**aluza
ngc	
bha**d**uza	bha**ngc**uza
mba**nd**aza	mba**ngc**aza
q	
bandula	**q**andula
daphuna	**q**aphuna
gabavula	**q**abavula
hlambi	**q**ambi
khathatha	**q**athatha
kla**kl**abula	**q**a**q**abula
naphaza	**q**aphaza
nkalanga	**q**alanga
pa**t**a	pa**q**a
pa**tsh**a	pa**q**a
saphaza	**q**aphaza
thabatheka	**q**abatheka

Target root	***Isihlonipho* form**
	q (cont.)
thalaza	**q**alaza
thamunda	**q**amunda
yabatheka	**q**abatheka
	qh
habula	**qh**abula
hlakanyeka	**qh**akanyeka
kla**kl**abula	**qh**a**qh**abula
	nq
gampu	**nq**ampu
hlamuka	**nq**amuka
nkalanga	**nq**alanga
nkampu	**nq**ampu
qala**ng**a	qala**nq**a
tha**kl**aza	tha**nq**aza
	gq
bhadazela	**gq**adazela
bhamuka	**gq**amuka
dabuka	**gq**abuka
habhozi	**gq**abhozi
hhabhozi	**gq**abhozi
jaja	**gq**aja

Target root	***Isihlonipho* form**
	gq (cont.)
klabhuza	**gq**abhuza
	ngq
bha**d**u	bha**ngq**u
bhamuza	**ngq**amuza
dlavuza	**ngq**avuza
ngaphambili	**ngq**aphambili
zavu	**ngq**avu
	x
bhadazela	**x**adazela
bha**mb**abula	bha**x**abula
bha**ns**u	bha**x**u
bhaxabula	**x**axabula
da**ns**u	da**x**u
fa**hl**aka	fa**x**aka
hlakanhlaka	**x**akaxaka
hlaka**nhl**aka	xaka**x**aka
hlazuka	**x**azuka
nada**n**ada	**x**ada**x**ada
nyaka**ny**aka	**x**aka**x**aka
nya**k**azisa	xha**x**azisa
sakalala	**x**akalala

Target root	***Isihlonipho* form**
	x (cont.)
shada**sh**ada	**x**ada**x**ada
thansabula	**x**axabula
tha**ns**abula	xa**x**abula
	xh
dlakathisi	**xh**akathisi
hlaphaza	**xh**aphaza
ma**hl**iki**hl**iki	ma**xh**iki**xh**iki
nyakazisa	**xh**axazisa
saphaza	**xh**aphaza
	nx
gama**th**andukwana	gama**nx**andukwana
hlakanhlaka	**nx**akanxaka
hlaka**nhl**aka	nxaka**nx**aka
nga**nhl**anye	nga**nx**anye
nhlanye	**nx**anye
nyaka**ny**aka	**nx**aka**nx**aka
sakalala	**nx**akalala
	gx
dlathu	**gx**athu
ganxa	**gx**anxa
javunjavu	**gx**avugxavu

Target root	***Isihlonipho* form**
	gx (cont.)
javu**nj**avu	gxavu**gx**avu
zavu	**gx**avu
	ngx
hlakanhlaka	**ngx**akangxaka
hlaka**nhl**aka	ngxaka**ngx**aka
nyaka**ny**aka	**ngx**aka**ngx**aka